

DRAFT

Description and Comparison
of Alternatives

**U.S. 36 Corridor / NEPA
Study**

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Indiana Department of Transportation

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U.S. 36 CORRIDOR/NEPA STUDY

DESCRIPTION AND EVALUATION OF ALTERNATIVES

BACKGROUND

The Indiana Department of Transportation (INDOT) initiated a Corridor/NEPA Study along U.S. 36 through the Danville area in order to assess the implications of limited east-west roadway capacity and to identify possible improvement alternatives.

The Statement of Purpose and Need¹ established the following core objectives of any proposed action:

- Provide additional system capacity to accommodate the traffic demands of projected (20 year) development patterns as measured by:
 - Peak hour level of Service C or better in rural areas.
 - Peak hour level of Service D or better through Town
- Provide additional system flexibility (redundancy) as measured by:
 - Availability of alternate travel routes
 - Amount of through trip diversion

The Statement of Purpose and Need provided history and background of the area, and comprehensive documentation of the various natural and man-made constraints affecting any proposed action. Figure 1 illustrates the various constraints including floodways, wetlands, historic districts and structures, park and recreational areas, landfill, airport, railroad, cemeteries, and schools, among others.

The Statement of Purpose and Need identified various alternatives that have been further investigated, evaluated, and documented by this report.

¹ Statement of Purpose and Need, U.S.36 Corridor/NEPA Study, prepared for Indiana Department of Transportation by Edwards and Kelcey, Inc., June 2003

DESCRIPTION OF ALTERNATIVES

Seven alternatives were investigated as shown on Figure 2 and compared on Table 1.

The alternatives include:

- Northern alignment of bypass
- Railroad alignment of bypass (north)
- Railroad alignment of bypass (south)
- Southern alignment of bypass
- County road improvements
- Traffic operational improvements
- Do nothing

The following paragraphs and Figures 3 thru 8 describe each of the alternatives. The typical roadway cross-sections for the bypass alignment alternatives are shown on Figure 9.

Northern Alignment of Bypass

The “new terrain” bypass alternative, shown in Figure 3, would be 8.1 miles in length and would be approximately one mile north of the current U.S.36 (Main Street).

It would be a four-lane divided roadway with shoulders and open drainage. Seven bridges would be required over various streams, including a crossing of White Lick Creek, West Fork. All intersections with other roads would be at grade, including four which may be signalized and eight which would be unsignalized. Some driveways may be required to serve residences.

About 197 acres of right-of-way would be needed for the roadway. No residences or businesses would be displaced, although an adjacent residential neighborhood would be affected.

This alignment would serve about 9000 vehicles per day (crossing White Lick Creek) in 2025 at Level of Service (LOS) A. Traffic demand along existing U.S.36 (Main Street) through Danville would be about 39,000 vehicles per day (crossing White Lick Creek) at LOS F.

Table 1
U.S.36 Corridor / NEPA Study
COMPARISON OF ALTERNATIVES

	<u>Northern Alignment</u>	<u>North RR Alignment</u>	<u>South RR Alignment</u>	<u>South Alignment</u>	<u>County Rd. Improvements</u>	<u>Traffic Improvements</u>	<u>Do Nothing</u>
Length of Roadway (miles)							
2 lanes with shoulders	-	-	-	-	18.0	-	-
3 lanes with curbs	-	-	-	-	-	2.0	-
4 lanes with shoulders	6.6	1.1	1.1	8.8	-	-	-
4 lanes with curbs	-	2.3	3.0	-	-	-	-
Connections to U.S.36	1.5	0.8	1.0	0.8	-	-	-
Total:	8.1	4.2	5.1	9.6	18.0	2.0	-
Design Speed							
2 lanes with shoulders	-	-	-	-	40	-	-
3 lanes with curbs	-	-	-	-	-	30	30
4 lanes with shoulders	50	50	50	50	-	-	-
4 lanes with curbs	-	40	40	-	-	-	-
Connections to U.S.36	30	30	30	30	-	-	-
Number of Bridges							
Over Streams	7	3	2	12	18	1	-
Over Roads and Streams	-	1	-	1	-	-	-
Over Roads	-	-	1	-	-	-	-
Over Railroad and Road	-	-	1	1	-	-	-
Under Railroad	-	-	1	-	-	-	-
Temporary Railroad	-	-	1	-	-	-	-
Number of Intersections							
Signalized	4	3	3	4	4	5	5
Unsignalized	8	1	3	5	23	21	21
Driveways	some	none	none	many	many	many	many
Right-of-Way Required							
Number of Acres	197	101	124	232	168	1	-
Number of Residences	-	10	-	-	-	-	-
Number of Business	-	3	-	-	-	-	-
Impacts On:							
Floodways	10.3 ac	7.4 ac	9.1 ac	25.7 ac	2.0	-	-
Historic Districts	no	no	no	no	no	yes	-
Historic Buildings	no	1 bldg.	no	no	no	yes	-
Schools	no	near	no	no	no	yes	-
Recreational Areas	no	no	near	near	no	yes	-
Neighborhoods	yes	no	no	yes	yes	yes	-
Cemeteries	near	near	no	no	no	no	-
Wetlands	26.3 ac	6.4 ac	5.4 ac	18.4 ac	no	no	-
Woodlands	23.6 ac	49.7 ac	36.6 ac	27.2 ac	no	no	-
Average Daily Traffic*							
(Future) Crossing White Lick Creek							
CR200N	-	-	-	-	5 (A)	-	-
Northern Alignment	9 (A)	-	-	-	-	-	-
Main Street	39 (F)	25 (C/D)	25 (C/D)	45 (F)	42 (F)	48 (D/E)	48 (F)
North R.R. Alignment	-	23 (B/C)	-	-	-	-	-
South R.R. Alignment	-	-	23 (B/C)	-	-	-	-
Southern Alignment	-	-	-	6 (A)	-	-	-
CR200S	3 (A)	3 (A)	3 (A)	-	4 (A)	3 (A)	3 (A)
Total:	51.0	51.0	51.0	51.0	51.0	51.0	51.0
System Redundancy Improvement	minimum	maximum	maximum	minimum	minimum	none	none
Cost Estimates (millions)							
Roadway Construction	\$ 31.2	\$ 17.2	\$ 21.2	\$ 35.9	\$ 23.9	\$ 3.5	-
Bridge Construction	5.8	3.8	21.1	9.1	7.0	-	-
Total Construction	37.0	21.0	42.3	45.0	30.9	3.5	-
Engineering	1.3	0.8	2.0	1.6	1.6	0.2	-
Right-of-Way	0.9	4.7	0.9	1.1	0.9	0.5	-
Total Cost:	39.2	26.5	45.2	47.7	33.4	4.2	-

* Average Daily Traffic given in thousands of vehicles

(C/D) denotes Levels of Service during peak hours at critical intersections

The cost to construct the northern alignment is estimated to be about \$39.2 million including right-of-way and engineering.

A summary of the characteristics of the Northern Alignment is given in Table 1.

North Railroad Alignment

The “new terrain” alignment along the north edge of the CSX Railroad, shown in Figure 4, would be 3.4 miles in length and would be approximately 0.5 mile south of the current U.S.36 (Main Street).

It would be a four lane divided roadway, 1.1 miles of which would be constructed with shoulders and open drainage, and 23 miles of which would be constructed with curbs and enclosed drainage.

Three bridges would be required over streams and one bridge over both the Twin Bridges Road and the White Lick Creek (West Branch). All intersections with other roads would be at grade, except for a ramp system to interchange the current U.S.36 with the new alignment at its east end. There would be no private driveway connections.

About 101 acres of right-of-way would be required for the roadway. As many as ten residences, three businesses, and two historic sites, may be displaced or affected. The historic sites include a residence and a bridge, both listed on the National Register of Historic Places².

This alignment would serve about 23,000 vehicles per day (crossing White Lick Creek) in 2025 at LOS Band C. Traffic demand along existing U.S.36 (Main Street) through Danville would be about 25,000 vehicles per day (crossing White Lick Creek) at LOS C and D.

The cost to construct this alternative is estimated to be about \$26.5 million including right-of-way and engineering.

² 1850 Wilson-Courtney House on Cartersburg Road; 1887 Baltimore through truss over White Lick Creek , West Fork

A summary of the characteristics of this alignment is given in Table 1.

South Railroad Alignment

The “new terrain” alignment along the south edge of the CSX Railroad, shown in Figure 5, would be 4.1 miles in length and would be approximately 0.6 mile south of the current U.S.36 (Main Street). It would be a four lane divided roadway, 1.1 miles of which would be with shoulders and open drainage, and 3.0 miles of which would be with curbs and enclosed drainage.

This alignment would cross over the railroad near its west end, and under the railroad near its east end. A temporary railroad bridge spanning White Lick Creek and Twin Bridges Road would be needed to bypass train traffic while the roadway underpass is being constructed.

Two other roadway bridges over streams would be required, including one over White Lick Creek (West Fork).

All intersections with other roads would be at grade, except for a ramp system to interchange the current U.S.36 with the new alignment at its east end. There would be no private driveway connections except for the Twin Bridges Land Fill.

About 124 acres of right-of-way would be required for the roadway. No residences or businesses would be displaced.

The alignment would serve about 23,000 vehicles per day (crossing White Lick Creek) in 2025 at LOS B and C. Traffic demand along existing U.S.36 (Main Street) through Danville would be about 25,000 vehicles per day (crossing White Lick Creek) at LOS C and D.

The cost to construct this alternative is estimated to be about \$45.2 million including temporary bridging, right-of way and engineering.

A summary of the characteristics of this alignment is given in Table 1.

Southern Alignment of Bypass

The southern alignment, shown on Figure 6, would be partly on “new terrain” and partly along the current alignment of CR 200S. The total length would be about 8.8 miles in length and would be about two miles south of the current U.S.36.

It would be a four lane divided roadway with shoulders and open drainage. Thirteen bridges over streams would be required including one over White Lick Creek (West Fork). One bridge over both the CSX Railroad and U.S.36 would be required at the east end of the alignment.

All intersections with other roads would be at grade including four which may be signalized and five which would not be signalized. There would be frequent driveways that would serve private residences along the existing alignment of CR 200 S

About 232 acres of right-of-way would be needed for the roadway. No residences or businesses would be displaced, although about 30 residences along CR200S would be affected.

The alignment would serve about 6,000 vehicles per day (crossing White Lick Creek) at LOS A. Traffic demand along existing U.S.36 (Main Street) would be about 45,000 vehicles per day (crossing White Lick Creek) at LOS F.

The cost to construct this alternative is estimated to be 47.7 million including right-of-way and engineering.

A summary of the characteristics of this alternative are given in Table 1.

County Road Improvements

This alternative would improve segments of CR 200 S, 200 N, 300 E, and 200 W to provide a high-quality two-lane perimeter roadway system around Danville as shown by Figure 7. The total length of the improved roads would be 18 miles, including the construction of a new one mile segment of CR 200 W, a new one mile segment of CR 300 E, and a new 2.5 mile segment of CR 200 N to extend across White Lick Creek (West Fork).

The improved and new segments of the county roads would be 24 feet wide (1 lane each direction) with shoulders and open drainage. Seventeen bridges would be replaced or widened. All other roads, and over 100 private driveways, would intersect at grade.

About 168 acres of right-of-way would be needed to widen and extend the county roads. No residences would be displaced, although over 100 of them would be affected by the roadway widening.

The improved county roads would accommodate local development, but would divert few trips from U.S.36. Traffic demand along U.S.36 through Danville would be about 42,000 vehicles per day at LOS F.

The cost to improve and extend the county roads is estimated to be about \$33.4 million including right-of-way and engineering.

A summary of the characteristics of this alternative is given in Table 1.

Traffic Operational Improvements.

Opportunities to improve traffic operations along the U.S 36 corridor through Danville are limited because of narrow rights-of-way and potential negative impacts on historic districts and buildings, and residential neighborhoods.

This alternative shown by Figure 8, therefore, considers the reconstruction of a two mile segment of existing U.S.36 within the Town to provide for one lane in each direction and a reversible center lane. The roadway would be 36 feet in width with curbs, gutters, and sidewalks along each side. Turning radii at each intersection would be lengthened to accommodate turning vehicles. Traffic signals and a lane control system would be installed to respond to the predominant directional traffic demands.

The daily traffic demands would be about 48,000 vehicles per day at LOS F.

The cost of this alternative is estimated to be about \$4.2 million including engineering and right-of-way.

A summary of the characteristics of this alternative is shown on Table 7.

Do Nothing

This alternative assumes that no roadway improvements will be constructed. If not, then traffic demands along U.S.36 will exceed capacity.

SUMMARY OF COMPARATIVE EVALUATIONS

Evaluation criteria includes the following core objectives:

- Provide additional system capacity to accommodate the traffic demands of projected (20 year) development patterns as measured by:
 - Peak hour level of Service C or better in rural areas.
 - Peak hour level of Service D or better through Town
- Provide additional system flexibility (redundancy) as measured by:
 - Availability of alternate travel routes
 - Amount of through trip diversion

Of the seven alternatives evaluated, two meet the core objectives:

- North Railroad Alignment
- South Railroad Alignment

Each provide essentially the same levels of traffic service, and each provide system flexibility by providing convenient alternate travel routes through the Danville area. The additional system redundancy is a benefit in case that Main Street is blocked by accident.

The North Railroad Alignment would be 3.4 miles in length and cost an estimated \$26.5 million. It would displace as many as three businesses and ten residences, one of which is historically significant. It would require approximately 101 acres of new right-of-way.

The South Railroad Alignment would be 4.1 miles in length and cost an estimated \$45.2 million. It would displace no residences or businesses, but would require approximately 124 acres of new right-of-way, some of which includes a portion of a privately owned golf course.

The cost differential of nearly \$19 million is attributable to the need for the South Railroad Alignment to cross the CSX Railroad twice; once over and once under. The under crossing construction would require a temporary railroad bridge to be built over White Lick Creek in order to bypass train traffic during the construction of a new railroad bridge over the new roadway alignment.

The North and South Railroad Alignments would similarly impact the White Lick Creek Valley where it has been previously disturbed by urban activities.

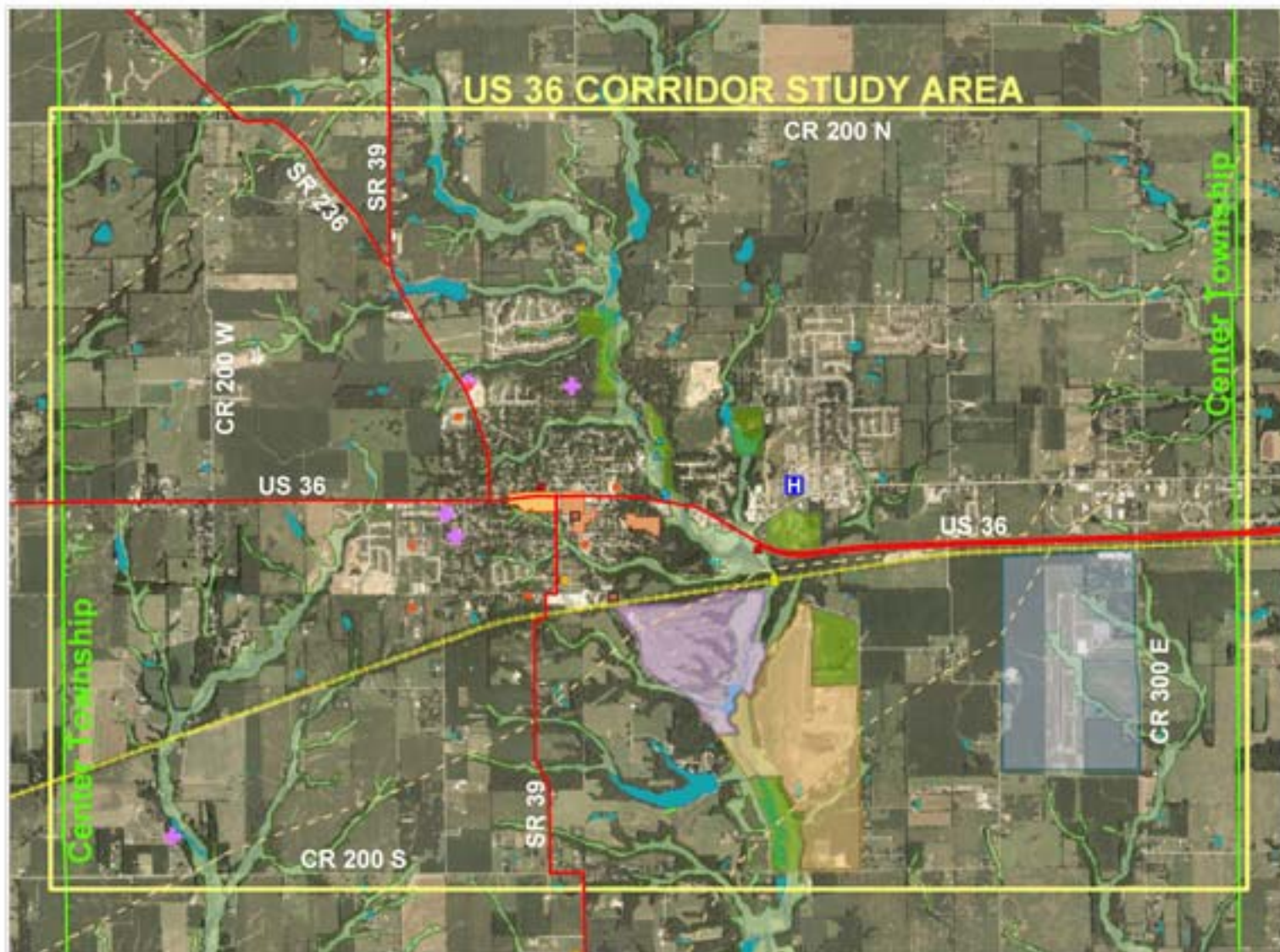
Because of their close proximity to the CSX Railroad, the North and South Railroad Alignments each have a minimum impact on the neighborhood fabrics of the Town.

However, each of these Alignments require coordination with other INDOT and local plans for replacing roadway bridges over the CSX Railroad.

Both the North and South Railroad Alignments should be considered as viable alternatives that satisfy the purpose and need of the project. It is recommended that Environmental Assessments be conducted for each of these Alignments.

APPENDIX





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Notes:
Digital ortho-photomosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Natural and institutional development constraints symbolized in this map will be used, without legend, in subsequent Alternative Alignment Analysis maps in this report.

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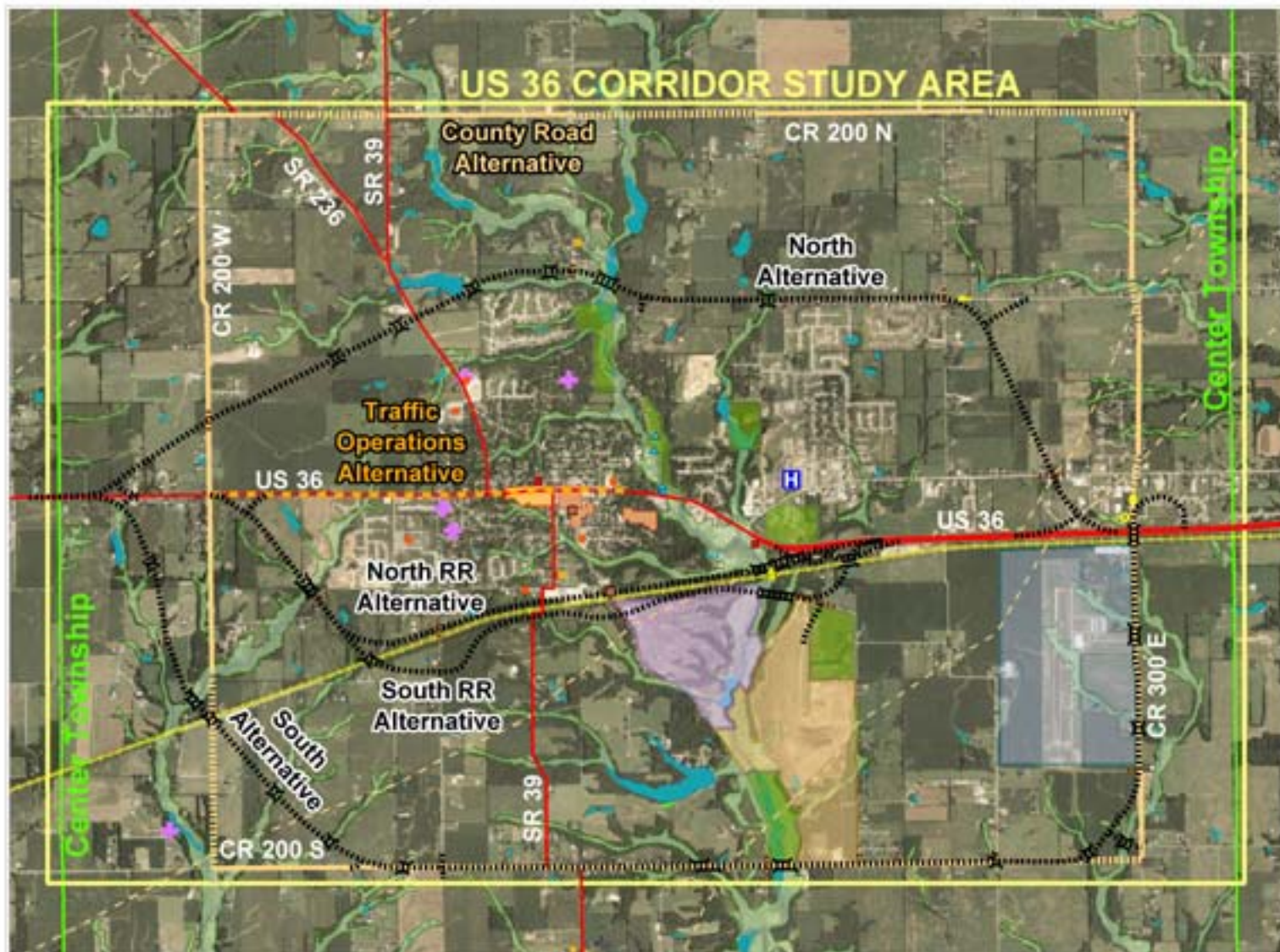
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Miscellaneous Constraints

- Flood Associated Soils
- NWI Wetlands
- Park / Recreational
- Golf Course
- Landfill
- Airport
- Railroad
- Cemetery
- School
- Church
- Hospital
- Fire Station
- Public Well
- Pipeline
- Historic Structures**
 - Historic Building
 - Historic Bridge
- Historic Districts**
 - Natl Reg of Hist Places
 - Hist Underl. Fdn. of Ind.

Figure 1



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Notes:
Digital ortho-photomosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints symbol definitions.

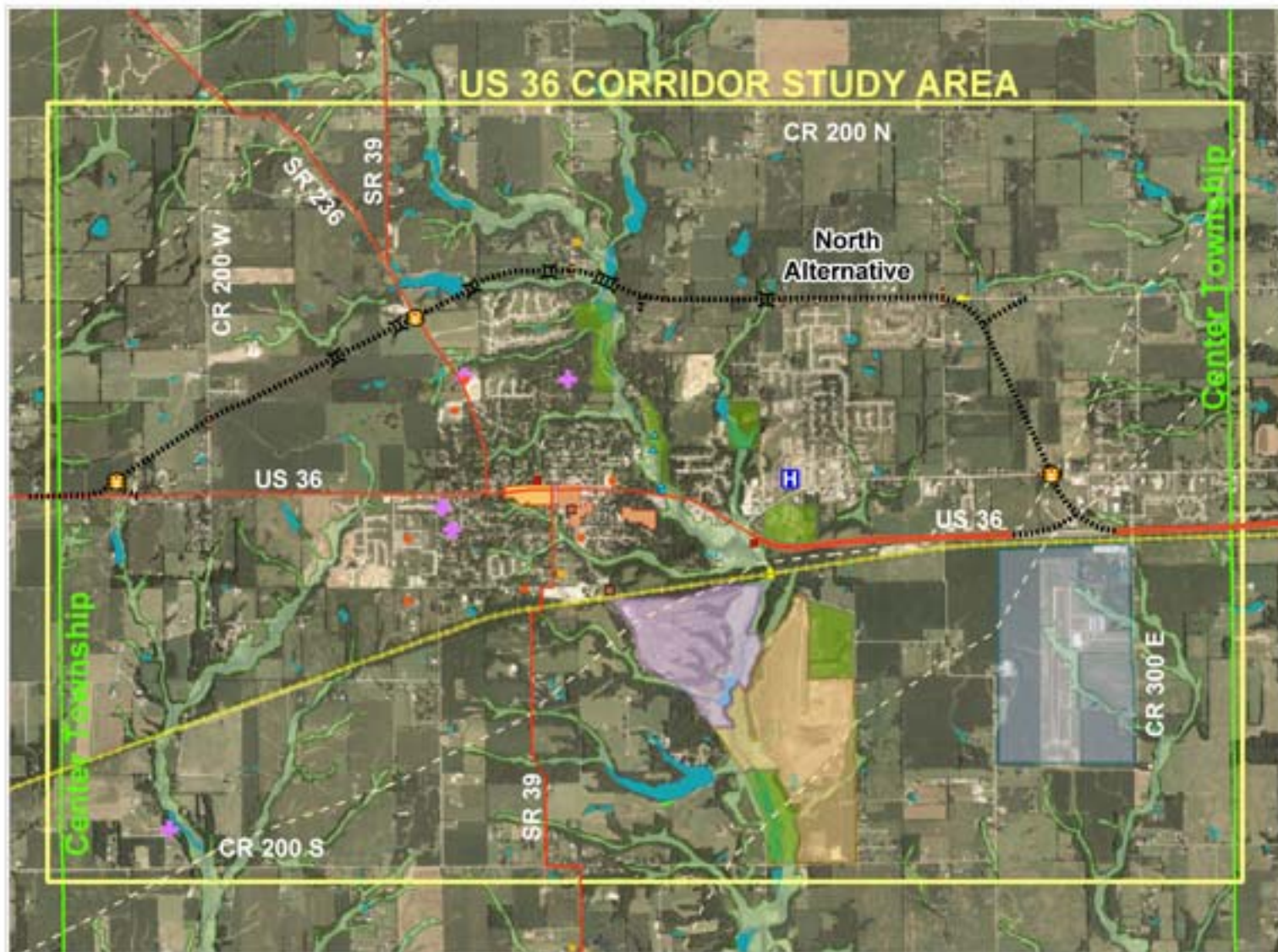
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Evaluated Alternatives

- Existing Highway
- Railroad
- North Alternative**
 - North Alignment
 - Local Road Improvement
 - Bridge
 - Terminate Exist. Local Road
- North RR Alternative**
 - North RR Alignment
 - Local Road Improvement
 - Bridge
- South RR Alternative**
 - South RR Alignment
 - Local Road Improvement
 - Bridge
- South Alternative**
 - South Alignment
 - Local Road Improvement
 - Bridge
 - Terminate Exist. Local Road
- County Road Alternative**
 - New Alignment
 - Improved Alignment
- Traffic Operations Alternative**
 - Traffic Operations Enhancements

Figure 2



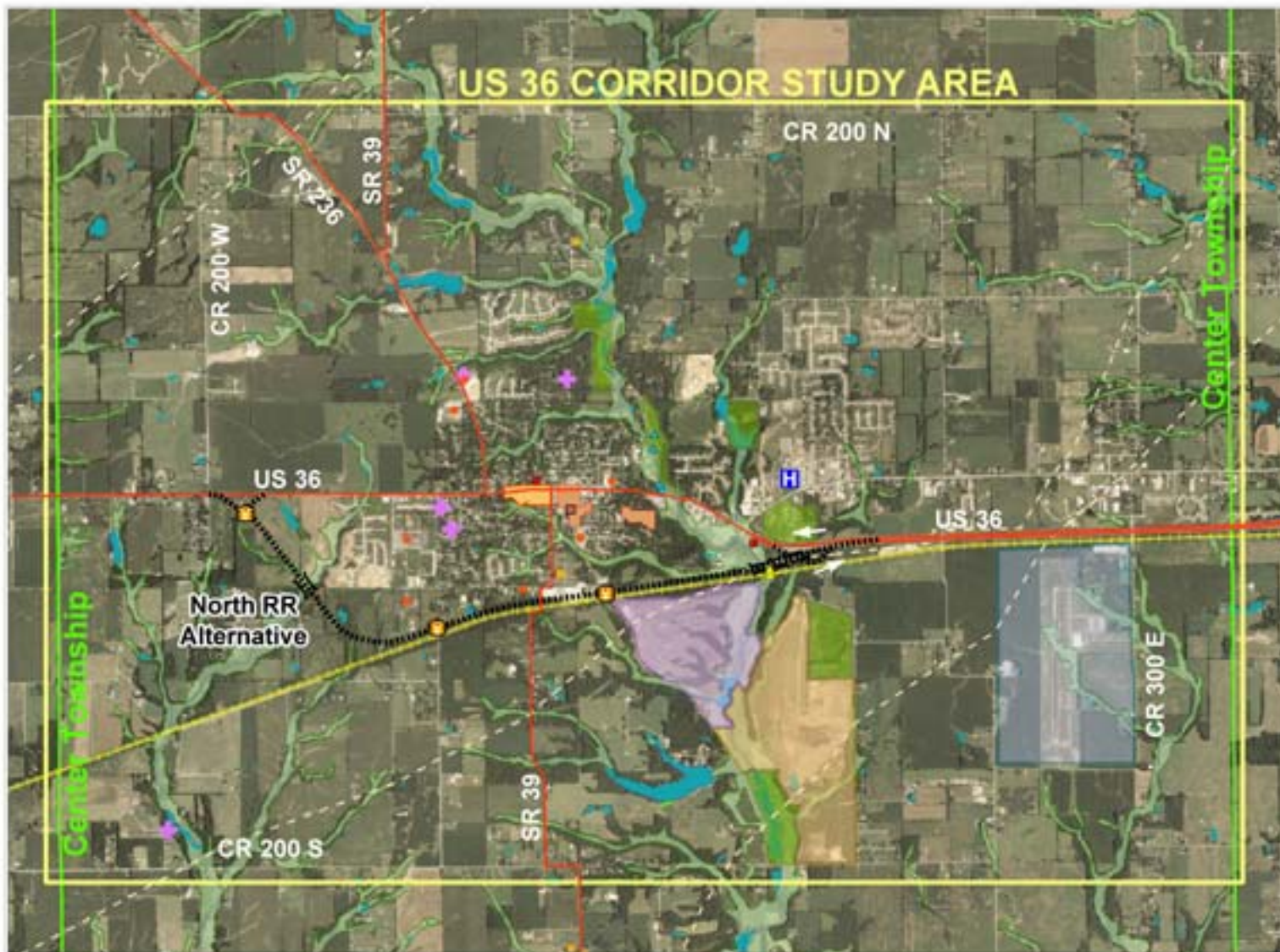
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Refer to Figure 1 for natural and institutional development constraints symbol definitions.

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Figure 3



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North RR Alternative Alignment

North RR Alternative

- North RR Alignment
- Local Road Improvement
- Bridge
- Existing Highway
- Railroad
- Signalized Intersection

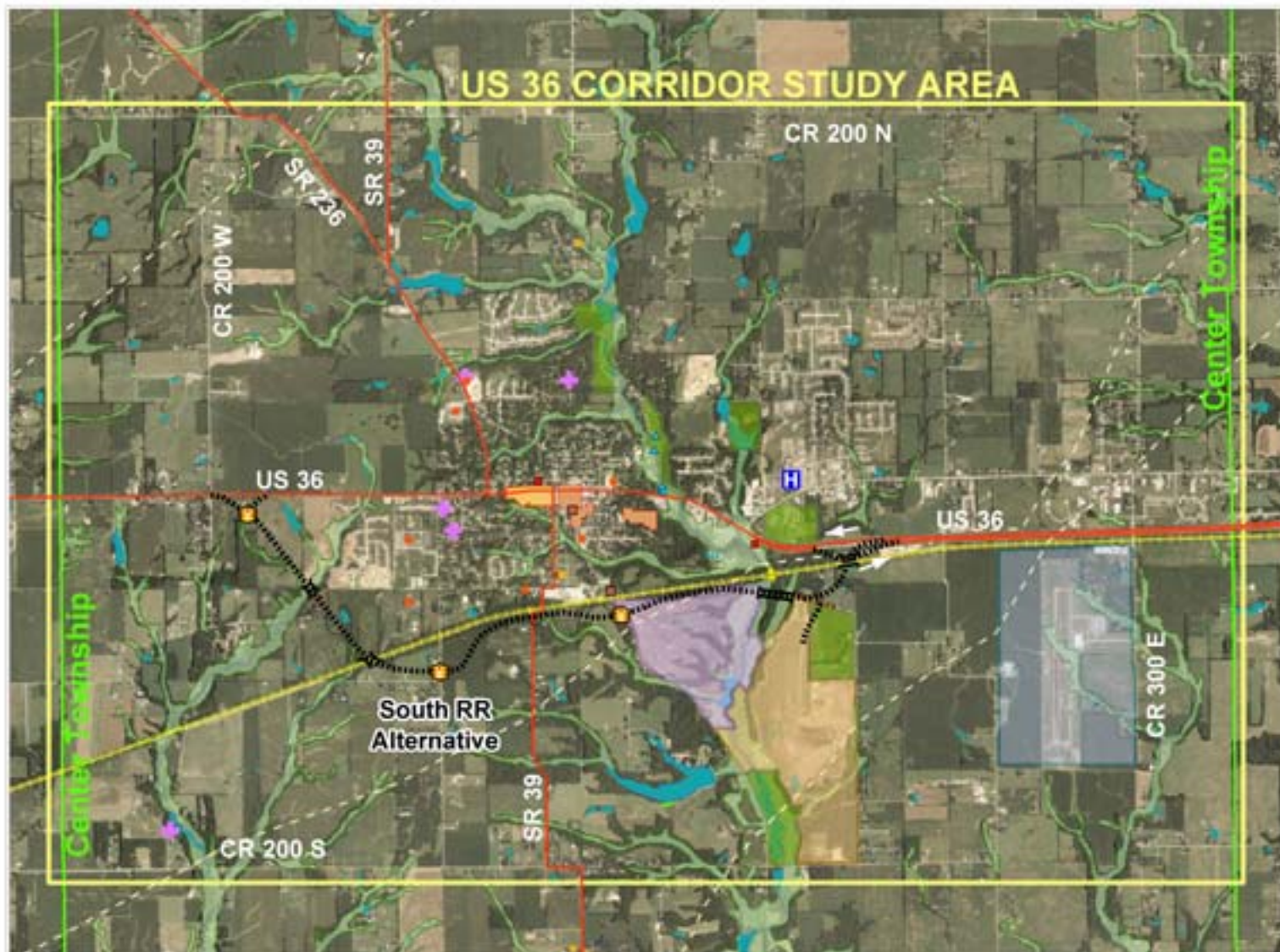
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Notes:
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(NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints
symbol definitions.

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Figure 4



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Notes:
Digital ortho-photomosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints symbol definitions.

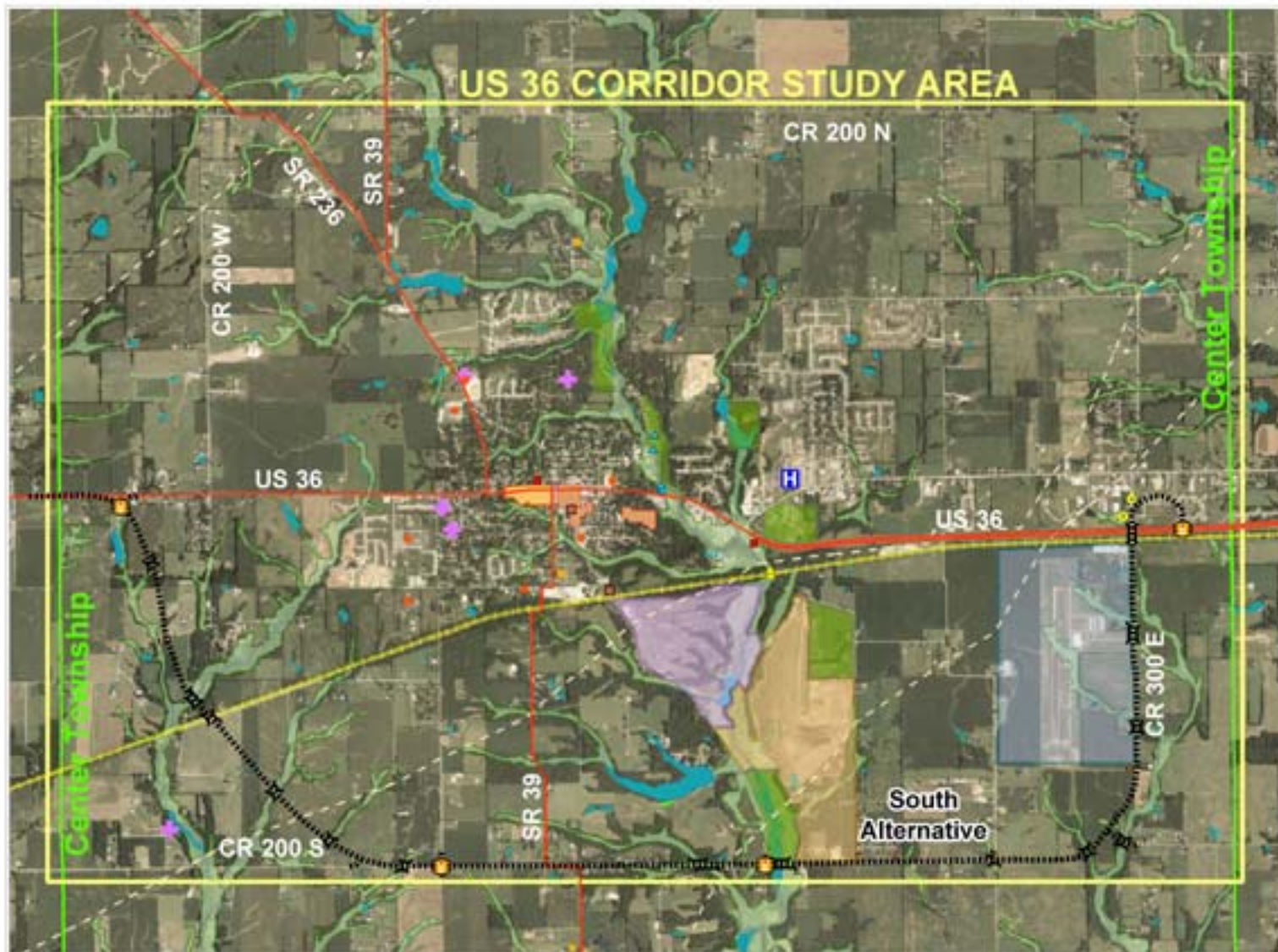
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South RR Alternative Alignment

- South RR Alternative**
- South RR Alignment
 - Local Road Improvement
 - Bridge
 - Existing Highway
 - Railroad
 - Signalized Intersection

Figure 5



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Notes:
Digital ortho-photomosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints symbol definitions.

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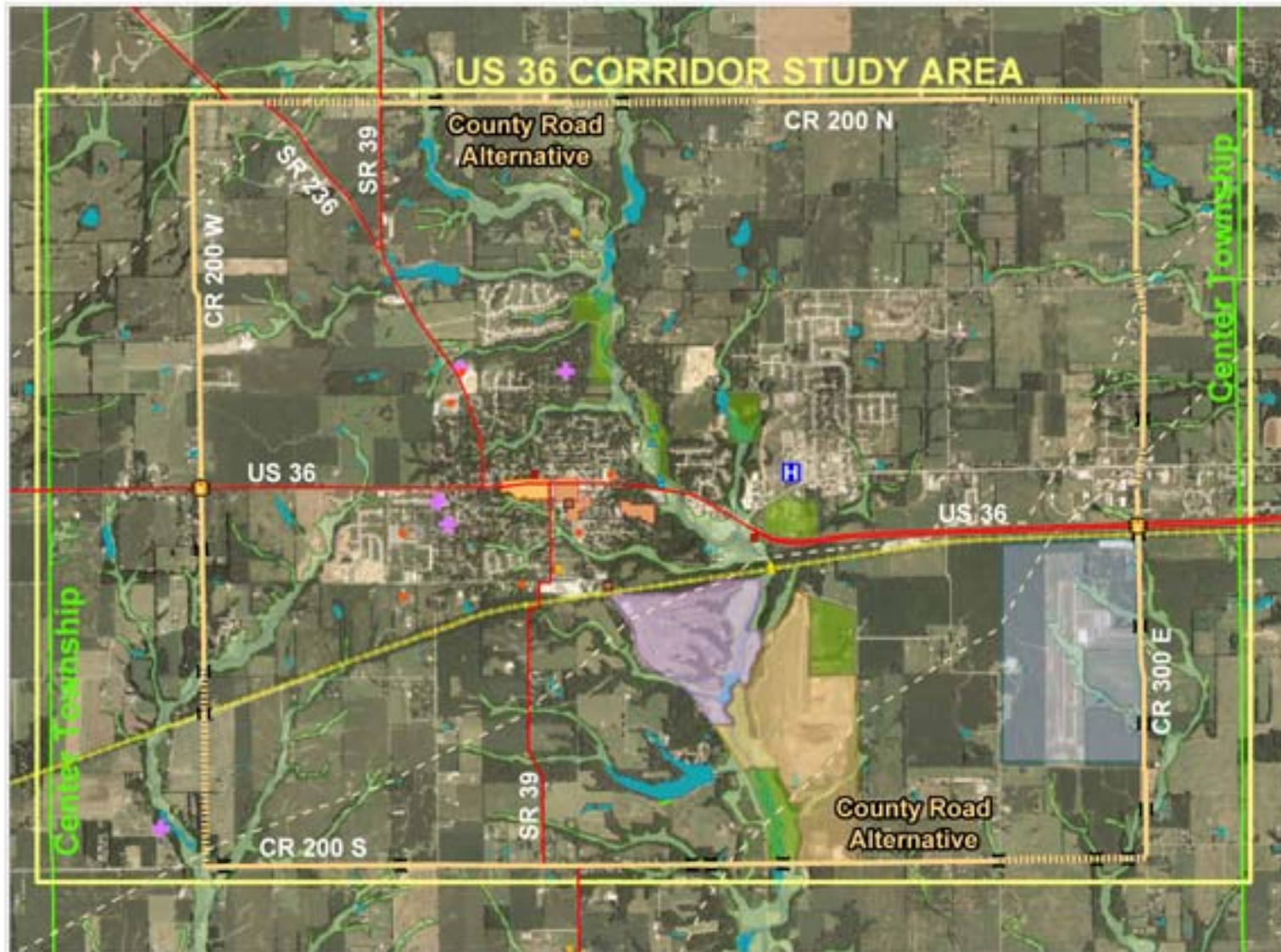
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Figure 6

US 36 Corridor NEPA Study

County Road Alternative

-  New Alignment
 Improved Alignment
 Bridge
 Existing Highway
 Railroad
 Signalized Intersection

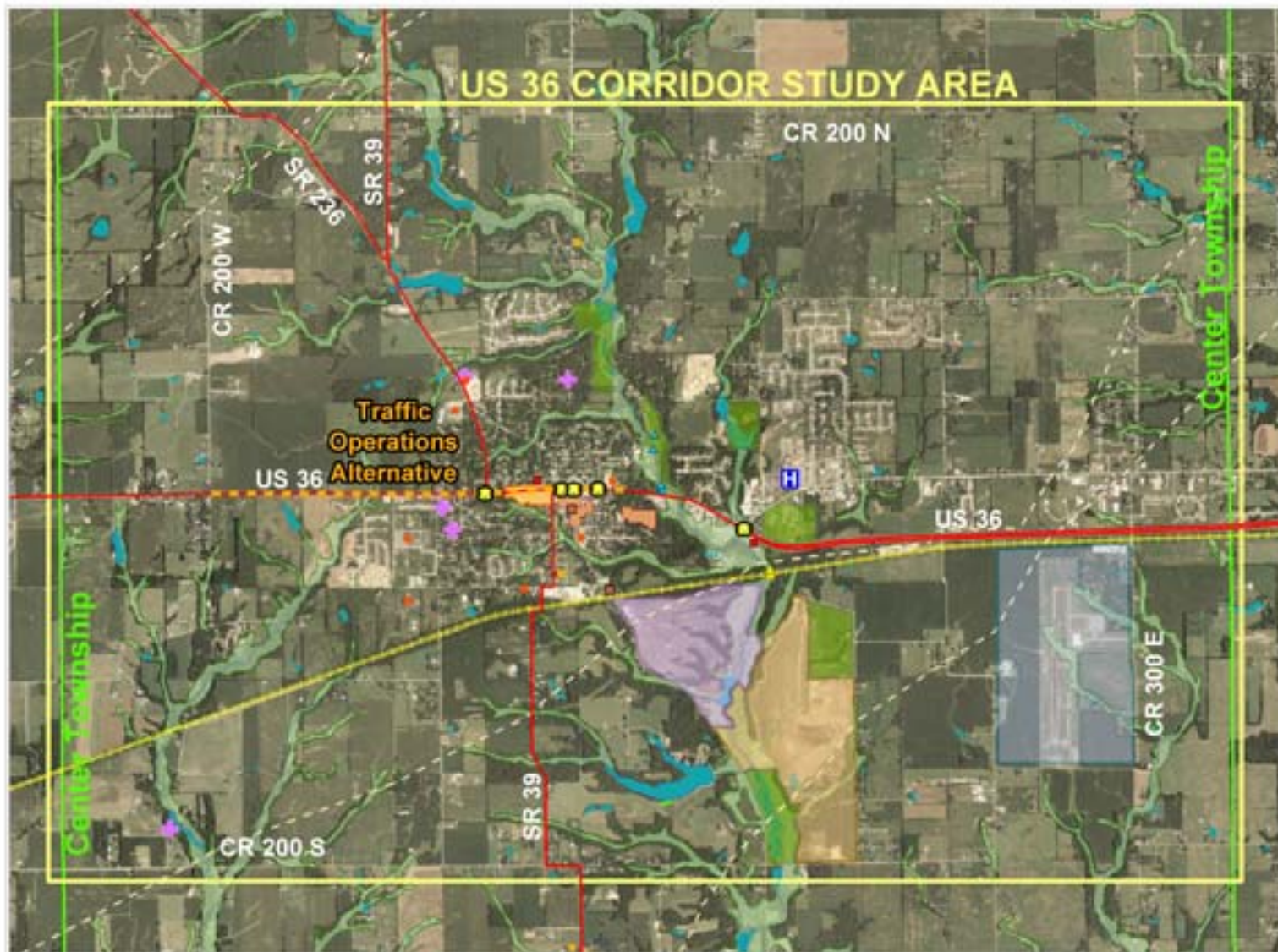


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Notes:
Digital ortho-photos mosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints symbol definitions.



Figure 7



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Notes:
Digital ortho-photomosaic from National Agricultural Imagery Program (NAIP), Summer 2003.
Refer to Figure 1 for natural and institutional development constraints symbol definitions.

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Traffic Operations Alternative

Traffic Operations Alternative

--- Traffic Operations Enhancements

● Exist. Signalized Intersection

— Existing Highway

--- Railroad

Historic Districts

■ Natl Reg of Hist Places

■ Hist Lndmk Fdn of Ind

Historic Structures

■ Historic Building

▲ Historic Bridge

Figure 8

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Typical Roadway Sections

